

**WEST****End of Result Set**

Generate Collection

Print

L1: Entry 3 of 3

File: USPT

Jan 6, 1998

US-PAT-NO: 5705391DOCUMENT-IDENTIFIER: US 5705391 A

TITLE: Modified acyl-ACP desaturase

DATE-ISSUED: January 6, 1998

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cahoon; Edgar B.	Shoreham	NY		
Shanklin; John	Shoreham	NY		
Lindgvist; Ylva	Jarfalla			SE
Schneider; Gunter	Jarfalla			SE

US-CL-CURRENT: 435/419; 435/189, 435/243, 435/252.3, 435/254.11, 435/255.1, 435/320.1,  
536/23.2

## CLAIMS:

We claim:

1. A nucleic acid sequence encoding a mutant acyl-ACP desaturase which is characterized by the ability to catalyze desaturation of a first fatty acid and a second fatty acid, the first and second fatty acids differing in their chain length, the desaturation rates of both the first and second fatty acids differing by no more than about 4-fold, the nucleic acid sequence encoding the mutant acyl-ACP desaturase being characterized by a point mutation at an amino acid contact residue in the substrate binding channel, the nucleic acid sequence being further characterized as having a sufficient degree of amino acid identity with the amino acid sequence of *Ricinus communis* .DELTA..sup.9 desaturase to enable statistically significant sequence alignment with the *Ricinus communis* .DELTA..sup.9 desaturase.

2. The nucleic acid sequence of claim 1 wherein the point mutation is introduced into wild-type *Ricinus communis* .DELTA..sup.9 desaturase at one or more amino acid contact residues selected from the group consisting of residues 114, 115, 117, 118, 179, 181, 188 and 189.

3. A DNA expression construct comprising, in expressible form, a nucleic acid sequence encoding a mutant acyl-ACP desaturase which is characterized by the ability to catalyze desaturation of a first fatty acid and a second fatty acid, the first and second fatty acids differing in their chain length, the desaturation rates of both the first and second fatty acids differing by no more than about 4-fold, the nucleic acid sequence encoding the mutant acyl-ACP desaturase being characterized by a point mutation at an amino acid contact residue in the substrate binding channel, the nucleic acid sequence being further characterized as having a sufficient degree of amino acid identity with the amino acid sequence of *Ricinus communis* .DELTA..sup.9 desaturase to enable statistically significant sequence alignment with the *Ricinus communis* .DELTA..sup.9 desaturase.

4. The DNA expression construct of claim 3 wherein the point mutation is introduced into wild-type *Ricinus communis* .DELTA..sup.9 desaturase at one or more amino acid contact residues selected from the group consisting of residues 114, 115, 117, 118, 179, 181, 188 and 189.
5. A cell transformed with a DNA expression construct comprising, in expressible form, a nucleic acid sequence encoding a mutant acyl-ACP desaturase which is characterized by the ability to catalyze desaturation of a first fatty acid and a second fatty acid, the first and second fatty acids differing in their chain length, the desaturation rates of both the first and second fatty acids differing by no more than about 4-fold, the nucleic acid sequence encoding the mutant acyl-ACP desaturase being characterized by a point mutation at an amino acid contact residue in the substrate binding channel, the nucleic acid sequence being further characterized as having a sufficient degree of amino acid identity with the amino acid sequence of *Ricinus communis* .DELTA..sup.9 desaturase to enable statistically significant sequence alignment with the *Ricinus communis* .DELTA..sup.9 desaturase.
6. The cell of claim 5 wherein the point mutation is introduced into wild-type *Ricinus communis* .DELTA..sup.9 desaturase at one or more amino acid contact residues selected from the group consisting of residues 114, 115, 117, 118, 179, 181, 188 and 189.
7. The cell of claim 5 which is a prokaryotic cell.
8. The cell of claim 5 which is a eukaryotic cell.
9. The cell of claim 8 which is a plant cell.